Having described the invention, we claim the following:

1.   A method for determining an optimal classifier model for a pattern recognition system, comprising:

selecting a plurality of initial classifier models from a set of available classifier models;

producing an optimal representative classifier for each classifier model according to an iterative optimization routine; and

accepting the representative classifier having a best associated value for a fitness function.

2.   A method as set forth in claim 1, wherein the step of producing an optimal representative of a classifier model includes iteratively repeating the following steps until the occurrence of a termination event:

determining an architecture for each selected classifier model according to an optimization algorithm;

optimizing at least one numerical parameter within the determined architecture; and

determining a set of optimum features for the determined architecture.

3.   A method as set forth in claim 2, wherein the step of selecting a set of features includes the use of principle component analysis.

4.   A method as set forth in claim 2, wherein the architecture is determined according to a genetic optimization algorithm.

5.   A method as set forth in claim 1, wherein the classifier model is automatically updated to recognize additional classes, further comprising the following steps:

grouping a plurality of rejected pattern samples into clusters according to the similarities between the pattern samples;

searching at least one database to identify at least one of the clusters of rejected pattern samples;

submitting at least one cluster not identified in the database search to an expert verifier for identification if one or more clusters are not identified in the database search; and

adding the pattern samples from the identified clusters to a set of training samples.

6.   A method as set forth in claim 1, wherein the method further comprises the step of determining a set of output classes via a clustering algorithm and associating each of a plurality of training samples with an output class.

7.   A method of automatically updating a pattern recognition classifier to recognize additional classes, comprising:

grouping a plurality of rejected pattern samples into clusters according to similarities among the pattern samples;

searching at least one database to identify at least one of the clusters of rejected pattern samples;

submitting at least one cluster not identified in the database search to an expert verifier for identification if one or more clusters are not identified in the database search; and

adding the pattern samples from the identified clusters to a set of training samples.

8.   A method as set forth in claim 7, wherein the classifier is retrained to incorporate the new pattern samples, comprising the following steps:

selecting a plurality of classifier models from a set of available classifier models;

producing an optimal representative classifier for each classifier model according to an iterative optimization routine; and

accepting the representative classifier having a best associated value for a fitness function.

9.   A method as set forth in claim 8, wherein the step of producing an optimal representative classifier includes iteratively repeating the following steps until a termination event occurs:

determining an architecture for each selected classifier model according to an optimization algorithm;

optimizing at least one numerical parameter within the determined architecture; and

determining a set of optimum features for the determined architecture.

10.   A method as set forth in claim 7, wherein the step of searching at least one database includes searching a plurality of databases, including an internal database maintained by the system, and an external database maintained externally.

11.   A method as set forth in claim 10, wherein searching the plurality of databases includes searching an Internet website.

12.   A computer program product, operative in a data processing system, for determining an optimal classifier model for a pattern recognition system, comprising:

a system control program that selects a plurality of classifier models from a set of available classifier models; and

an iterative loop that produces an optimal representative classifier for each classifier model according to an iterative optimization routine;

wherein the system control program accepts the representative classifier having a best associated value for a fitness function upon termination of the iterative optimization routine.

13.   A computer program product as set forth in claim 12, the iterative loop comprising:

an architecture determination portion that determines an architecture for each selected classifier model according to an optimization algorithm;

a parameter optimizer that optimizes at least one parameter within the determined architecture; and

a feature optimizer that selects an optimal set of features for the determined architecture.

14. A computer program product as set forth in claim 11, wherein the pattern recognition classifier is automatically updated to recognize additional output classes, further comprising the following:

a clustering portion that groups a plurality of rejected pattern samples into clusters according to the similarities between the pattern samples;

an artificially intelligent trained program that searches at least one database to identify at least one of the clusters of rejected pattern samples; and

a controller program that submits at least one cluster not identified in the database search to an expert verifier for identification, if one or more clusters are not identified in the database search, and adds the pattern samples from the identified clusters to a set of training samples.

15. A computer program product as set forth in claim 11, wherein the computer program product further comprises

a classifier initializer that determines a set of output

classes via a clustering algorithm and associates each of

a plurality of training samples with an output class.

16.   A computer program product as set forth in claim

15, wherein the set of output classes is determined using

a self-organizing map.

17.   A computer program product, operative in a data

processing system, for updating a pattern recognition

classifier to recognize new classes, comprising:

a clustering portion that groups a plurality of

rejected pattern samples into clusters according to the

similarities between the pattern samples;

an artificially intelligent trained program that

searches at least one database to identify at least one of

the clusters of rejected pattern samples; and

a controller program that submits at least one

cluster not identified in the database search to an expert

verifier for identification, if one or more clusters are

not identified in the database search, and adds the

pattern samples from the identified clusters to a set of

training samples.

18. A computer program product as set forth in claim 17, wherein the classifier is retrained to incorporate the new pattern samples, further comprising the following:

a system control program that selects a plurality of classifier models from a set of available classifier models; and

an iterative loop that produces an optimal representative classifier for each classifier model according to an iterative optimization routine;

wherein the system control program accepts the representative classifier having a best associated value for a fitness function at the termination of the optimization routine.

19. A computer program product as set forth in claim 18, the iterative loop comprising:

an architecture determination portion that determines an architecture for each selected classifier model according to an optimization algorithm;

a parameter optimizer that optimizes at least one parameter within the determined architecture; and

a feature optimizer that selects an optimal set of features for the determined architecture.

20. A computer program product as set forth in claim 17, wherein the artificially intelligent trained program searches a plurality of databases, including an internal database maintained by the system, and an external database maintained externally.

21. A computer program product as set forth in claim 17, wherein the plurality of rejected pattern samples are grouped using a self-organized map.